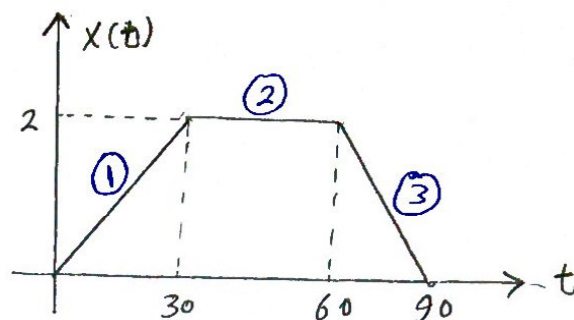


Find $X(z)$ for $T=1$

$$\boxed{1} \quad x_1(n) = \sum_{k=1}^{30} \frac{1}{15} n \delta(n-k)$$

$$\begin{aligned} X_1(z) &= \sum_{k=1}^{30} \frac{1}{15} \left[-z \frac{d}{dz} (z^{-k}) \right] \\ &= \sum_{k=1}^{30} \frac{1}{15} [k z \cdot z^{-k-1}] \\ &= \sum_{k=1}^{30} \frac{1}{15} [k z^{-k}] \end{aligned}$$



$$\boxed{2} \quad x_2(n) = \sum_{k=31}^{60} 2 \delta(n-k)$$

$$X_2(z) = \sum_{k=31}^{60} 2 z^{-k}$$

$$\boxed{3} \quad x_3(n) = \sum_{k=61}^{90} \frac{-1}{15} (n-90) \delta(n-k)$$

$$= \sum_{k=61}^{90} \frac{-1}{15} n \delta(n-k) + \sum_{k=61}^{90} 6 \delta(n-k) \rightarrow \text{like } \boxed{1} \sum_{k=61}^{90} \frac{1}{15} n \delta(n-k)$$

$$X_3(z) = \sum_{k=61}^{90} \frac{-1}{15} [k z^{-k}] + \sum_{k=61}^{90} 6 z^{-k}$$

$$X(n) = x_1(n) + x_2(n) + x_3(n)$$

$$X(z) = X_1(z) + X_2(z) + X_3(z)$$

$$X(z) = \sum_{k=1}^{30} \frac{1}{15} [k z^{-k}] + \sum_{k=31}^{60} 2 [z^{-k}] + \sum_{k=61}^{90} \frac{1}{15} [k z^{-k}] + \sum_{k=61}^{90} 6 [z^{-k}]$$